

CHEMICALS IN FISH FROM TEN RESERVOIRS IN ALAMEDA, CONTRA COSTA, SANTA CLARA, AND MARIN COUNTIES

INTERIM COUNTY HEALTH ADVISORIES

Elevated levels of mercury and PCBs (polychlorinated biphenyls) have been found in some fish from ten reservoirs in a study conducted by the San Francisco Bay Regional Water Quality Control Board in 2000-2002. The counties of Alameda, Contra Costa, Santa Clara, and Marin, in cooperation with the Cal/EPA Office of Environmental Health Hazard Assessment (OEHHA), have issued interim fish consumption advisories that recommend limited consumption of largemouth bass and other sport fish species from these reservoirs. Chemical concentrations varied among the fish species and reservoirs. An advisory table is provided in this fact sheet with the recommended consumption guidelines for each reservoir and the fish species that were tested thus far. The guidelines provide information that anglers and their families can use to protect themselves from harmful health effects that could result from eating large amounts of fish with high levels of mercury or PCBs.

Because fetuses and children are particularly sensitive to the effects of these chemicals, women of childbearing age and children 17 years and younger should be especially careful to follow the specific guidelines provided for them. A second set of guidelines is provided for women beyond childbearing age and men to protect their health.

What are the health concerns from eating fish from the reservoirs?

The levels of chemicals found in the reservoir fish will not make you sick if you eat them occasionally. However, frequent consumption of the fish over time may increase the risk of long-term health problems, especially in the case of pregnant women and children. Methylmercury (the most prevalent and toxic form of mercury in fish) can harm the development of fetuses and children, and affect the nervous systems of adults. Methylmercury will naturally leave the body over time if exposures are reduced or stopped. PCBs can also harm developing fetuses, and damage the immune system and other body functions in adults, and could increase the long-term risk of cancer.

Would it be better to stop eating all fish I catch from these reservoirs?

No. Fish are a nutritious part of your diet when eaten in moderate amounts. By following the recommended guidelines for eating fish, you can reduce your risk of health effects from exposure to methylmercury and PCBs and still enjoy the benefits from fish consumption. Anglers can also practice "catch-and-release" with bass and other types of fish that have higher levels of chemicals, and choose to eat the types of fish that are lower in chemicals.

Is water from these reservoirs safe to drink?

Yes. Treated water supplied from the reservoirs is safe for drinking and other domestic uses. The East Bay Municipal Utility District (EBMUD), Marin Municipal Water District, Santa Clara Valley Water District, and the California Department of Health

Services monitor the quality of drinking water from the reservoirs in their respective regions. Chemical contaminants found in this study do not concentrate in the water as they do in fish.

Why are these chemicals found in fish from the reservoirs?

Mercury is a metal that occurs naturally in the environment in several forms. It is a common element in the California Coast Ranges, where it was mined largely to support gold mining operations. Mercury from natural weathering and mercury-containing waste from mines can contaminate nearby water bodies. Other sources of mercury in the environment include coal-burning power plants, medical waste, and volcanic emissions. Mercury in the air ends up in water bodies from rain and runoff. Once mercury is deposited into water, bacteria in the bottom sediments change it into the more toxic form methylmercury. Fish take in methylmercury through their food. The amount of methylmercury in fish builds up through the food chain and, over time, larger, older fish will typically have higher methylmercury levels than younger, smaller ones. Top predators such as bass tend to have higher levels of methylmercury whereas trout are usually lower in methylmercury.

PCBs are mixtures of chemicals that were manufactured for electrical insulation and many other industrial uses. Due to widespread use, PCBs are common contaminants in urban environments where runoff carries them into water bodies. Although the manufacture of PCBs was banned in the 1970s, equipment that contains PCBs is still in use, and the chemicals can persist in the environment for many years. PCBs also accumulate in bottom sediments and move up the food chain into fish. Levels of PCBs tend to be higher in bottom-feeding fishes and fatty fishes such as catfish and carp.

How do these fish compare to fish from other water bodies?

Similar mercury levels have been found in largemouth bass in other lakes in the Coast Ranges of California. Similar levels of PCBs have been found in fish in San Francisco Bay and southern California.

Not all California water bodies or fish species have been tested. Fish in many other water bodies are known or suspected to have elevated levels of mercury or other chemicals. Therefore, when specific advice is not available, OEHHA recommends that women of childbearing age and children aged 17 years and younger eat no more than one sport fish meal per week (four meals a month), and women beyond childbearing age and men eat no more than three sport fish meals per week (12 meals a month) from any location. These guidelines can also be used for other types of fish that you catch but are not included in the advisories.

What if I buy and eat fish from other sources such as stores and restaurants?

Nearly all fish contain some methylmercury. So, all sources of fish should be considered when making choices about how much and which types of fish to eat. Most commercial fish in stores and restaurants have low levels of methylmercury. The U.S. Environmental Protection Agency and U.S. Food and Drug Administration recommend that pregnant

women, women who might become pregnant, nursing mothers, and young children do not eat any shark, swordfish, tilefish, or king mackerel, and eat up to an average of 12 ounces (two average meals¹) each week of fish (cooked) that are purchased in stores and restaurants. It is best to select from a *variety* of fish. If two meals of fish from a store or restaurant are eaten in a given week, then fish caught by family or friends should not be eaten the same week. Similarly, if you eat the fish you catch, your consumption of commercial fish should be limited during that time period.

What are the follow-up activities?

The San Francisco Bay Regional Water Quality Control Board plans to conduct more studies of the reservoirs and fish species that were not completely sampled in the initial effort. OEHHHA will use the results from these studies to conduct a thorough evaluation and develop state fish consumption advisories. The interim advisories should be followed until final guidelines are developed.

Where can I get more information?

For further information on the interim advisories, contact Dr. Margy Gassel of OEHHHA at 510-622-3170, or visit http://www.oehha.ca.gov/fish/so_cal/bayareares.html. You can also contact the local departments listed below for more information about a reservoir.

In Alameda County, contact the Alameda County Department of Environmental Health at 510-567-6700 or East Bay Regional Park District at 510-635-0135. For Lake Chabot, contact the East Bay Municipal Utility District (EBMUD) at 510-287-0459 or visit <http://www.ebmud.com>.

In Contra Costa County, contact Contra Costa Health Services at 1-877-662-8376 or call Chris Swann, Ranger Supervisor, at 925-284-9669 for Lafayette Reservoir, or Elizabeth Hill, Ranger Supervisor, at 510-287-2028, for San Pablo Reservoir, or visit <http://www.ebmud.com>.

For Soulajule, Nicasio, and Bon Tempe reservoirs, contact the Marin Municipal Water District's Water Quality Laboratory at 415-945-1550 or the Marin County Department of Health and Human Services at 415-499-6841.

For Stevens Creek or Anderson reservoirs, call the Santa Clara County Public Health Department at 408-885-3980. For information on water quality, contact the Santa Clara Valley Water District's Water Quality Hotline at 408-265-2607 ext. 2238. For information on recreation at the reservoirs, call the Santa Clara County Parks Department at 408-355-2215.

¹ Children should eat smaller amounts.

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If you eat the recommended maximum amount of fish from one reservoir, do not eat any other fish during the same month.

County	Reservoir and Fish Species	Women of childbearing age and children (17 years and younger) (meals per month*)	Women beyond childbearing years and men (meals per month*)
Alameda	Del Valle Reservoir		
	Largemouth bass OR	1	1
	Channel catfish OR	1	4
	Bluegill OR	4	12
	Redear Sunfish	4	12
	Lake Chabot		
	Carp OR	0	0
	Largemouth bass OR	1	4
	Channel catfish OR	4	4
	Redear Sunfish	4	12
	Shadow Cliffs Reservoir		
	Carp OR	1	1
	Largemouth bass OR	1	4
	Channel catfish	4	4
Contra Costa	San Pablo Reservoir		
	Channel catfish OR	1	1
	Carp OR	1	1
	Largemouth bass OR	1	4
	Black crappie OR	4	12
	Rainbow trout	12	12
	Lafayette Reservoir		
	Largemouth bass OR	1	4
	Goldfish OR	1	4
	Channel catfish OR	4	4
	Black crappie	12	12
Santa Clara	Stevens Creek Reservoir		
	Largemouth bass OR	0	1
	Channel catfish OR	1	1
	Black crappie	1	4
	Anderson Reservoir		
	Largemouth bass OR	0	1
	Carp OR	1	4
	Black crappie	1	4
Marin	Soulajule Reservoir		
	Largemouth bass OR	1	1
	Black crappie OR	1	4
	Channel catfish	1	4
	Nicasio Reservoir		
	Largemouth bass OR	1	4
	Carp OR	1	4
	Bluegill	4	12
	Bon Tempe Reservoir		
	Largemouth bass	1	1

* Meal size is assumed to be eight ounces (6 oz. cooked) for a 160-pound adult. Serve smaller meals to children.